



NOTICE OF ALLOWANCE AND FEE(S) DUE

26111 7590 01/11/2011

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER
LEAVITT, MARIA GOMEZ
ART UNIT PAPER NUMBER

1633
DATE MAILED: 01/11/2011

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

09/839,536 04/23/2001 Kirk Emil Apt 2715.0360001/JUK/SAS 2123

TITLE OF INVENTION: TROPHIC CONVERSION OF OBLIGATE PHOTOTROPHIC ALGAE THROUGH METABOLIC ENGINEERING

Table with 7 columns: APPLN. TYPE, SMALL ENTITY, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE

nonprovisional YES \$755 \$0 \$0 \$755 04/11/2011

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

26111 7590 01/11/2011

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
 1100 NEW YORK AVENUE, N.W.
 WASHINGTON, DC 20005

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,536	04/23/2001	Kirk Emil Apt	2715.0360001/JUK/SAS	2123

TITLE OF INVENTION: TROPIC CONVERSION OF OBLIGATE PHOTOTROPHIC ALGAE THROUGH METABOLIC ENGINEERING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$755	\$0	\$0	\$755	04/11/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
LEAVITT, MARIA GOMEZ	1633	435-471000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____</p> <p>(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____</p> <p>3 _____</p>
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3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE _____ (B) RESIDENCE: (CITY AND STATE OR COUNTRY) _____

Please check the appropriate assignee category or categories (will not be printed on the patent) : Individual Corporation or other private group entity Government

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
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5. Change in Entity Status (from status indicated above)

a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes application details for 09/839,536 and 26111, and examiner information for LEAVITT, MARIA GOMEZ.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 2196 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 2196 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability

Application No.

09/839,536

Examiner

MARIA LEAVITT

Applicant(s)

APT ET AL.

Art Unit

1633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

- 1. This communication is responsive to 10-25-2010.
- 2. The allowed claim(s) is/are 1 and 27-31.
- 3. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some* c) None of the:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

- 4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 - 5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date _____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
- 6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- 1. Notice of References Cited (PTO-892)
- 2. Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3. Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
- 4. Examiner's Comment Regarding Requirement for Deposit of Biological Material
- 5. Notice of Informal Patent Application
- 6. Interview Summary (PTO-413), Paper No./Mail Date _____.
- 7. Examiner's Amendment/Comment
- 8. Examiner's Statement of Reasons for Allowance
- 9. Other _____.

/Maria Leavitt/
Primary Examiner, Art Unit 1633

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Detailed Action

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10-25-2010 has been entered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3-6, 8-10, 27-39 and 43-55 are pending. Claims 2, 7, 11-26, 40-42, have been cancelled by applicants' amendment filed on 10-25-2010.

Applicant's representative was contacted on January 03, 2011 to amend claims 1 and 27-31, and to cancel claims 3-6, 8-10, 32-39 and 43-55 to overcome the rejections of record. Authorization for the examiner's amendment was given on January 07, 2010 by Scott Schaller.

With respect to the proposed claims, an examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it must be submitted no later than the payment of the issue fee.

In the claims,

Claims 3-6, 8-10, 32-39 and 43-55 have been cancelled.

Claims 1 and 27-31 have been amended as follows:

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Claim 1. A Bacillariophyta alga cell comprising an exogenous transgene, wherein the transgene comprises a nucleic acid construct encoding a glucose transporter selected from the group consisting of Glut1 (human erythrocyte glucose transporter 1) and Hup1 (Chlorella HUP1 Monosaccharide-H⁺ Symporter) under the control of a functionally linked promoter, wherein upon expression of the glucose transporter in an amount sufficient to transport glucose into the alga cell, said Bacillariophyta alga cell grows on glucose in the absence of light relative to the alga cell without the exogenous transgene.

Claim 27. The alga cell of claim 1, wherein the Bacillariophyta alga cell is selected from the group consisting of Nitzschia, Navicula, Thalassiosira and Phaeodactylum.

Claim 28. The alga cell of claim 27, wherein the Phaeodactylum cell is a Phaeodactylum tricornutum.

Claim 29. The alga cell of claim 1, wherein the promoter is a light harvesting promoter.

Claim 30. Page 5, line 1 of claim 30, the term “cell” is replaced by -- alga cell --

Claim 31. Page 5, line 1 of claim 31, the term “cell” is replaced by -- alga cell --

Reasons for allowance

The following is an examiner’s statement of reasons for allowance: The prior art of record does not teach or suggest a Bacillariophyta alga cell comprising an exogenous transgene, wherein the transgene comprises a nucleic acid construct encoding a glucose transporter selected from the group consisting of Glut1 (human erythrocyte glucose transporter 1) and Hup1

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(Chlorella HUP1 Monosaccharide-H⁺ Symporter) under the control of a functionally linked promoter, wherein upon expression of the glucose transporter in an amount sufficient to transport glucose into the alga cell, said Bacillariophyta alga cell grows on glucose in the absence of light relative to the alga cell without the exogenous transgene.

Of note, transformed *P. tricornutum* cell lines with yeast hexose symporters Hxt1, Hxt2, Hxt4 from *Saccharomyces cerevisiae* were incapable of detectable glucose uptake (page 40, lines 1-5; page 42, lines 1-5).

The closest art of Fischer et al., (1999, *Phycol* pp113-120) discloses functional expression of the hexose/H⁺symporter in *C. fusiformis* (Bacillariophyceae), but transformants were not able to grow on glucose in the dark (page 118, col. 1, first paragraph), which indicates that transformants must exceed a minimum rate of glucose uptake to supply the cells with a sufficient amount of glucose to allow proliferation in the dark. Thus trophic conversion of a Bacillariophyta alga cell requires expression of the glucose transporter in an amount sufficient to transport glucose into the alga cell so said Bacillariophyta alga cell grows on glucose in the absence of light relative to the alga cell without the exogenous transgene.

Rejections/Objections withdrawn in response to Applicants' arguments or amendments:

Claim Rejections - 35 USC § 102(b)

In view of amendment of claims 1 and 27-31, and cancellation of claims 3-6, 8-10, 32-39 and 43-55 by Examiner's amendment, rejection of **claims 1, 3, 5, 6, 8, 10, 24, 25, 32, 33, 35, 37,**

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39, 40, 41, 48, 49, 51, 53 and 55 under 435 U.S.C. 102(b) as being anticipated by Hallmann et al., (1996, Proc. Natl. Acad. Sci, pp. 669-673, of record) as evidenced by Harasawa U.S. Patent 4,235,043 (Date of Patent Nov. 25, 1980) has been withdrawn.

Claim Rejections - 35 USC § 103

In view of amendment of claims 1 and 27-31, and cancellation of claims 3-6, 8-10, 32-39 and 43-55 by Examiner's amendment, rejection of **claims 1, 2, 6 and 7** under 35 U.S.C. 103(a) as being unpatentable over Hallmann et al., (1996, Proc. Natl. Acad. Sci, pp. 669-673, of record) in view of Dunahay et al., (J. Phycol. pp. 1004-1012, of record) and further in view of Fisher et al., (1999, J. Phycol. pp. 113-120, of record) has been withdrawn.

In view of amendment of claims 1 and 27-31, and cancellation of claims 3-6, 8-10, 32-39 and 43-55 by Examiner's amendment, rejection of **claims 4 and 9** under 35 U.S.C. 103(a) as being unpatentable over Hallmann et al., (1996, Proc. Natl. Acad. Sci, pp. 669-673, of record) in view of Dunahay et al., (J. Phycol. pp. 1004-1012, of record) and further in view of Fisher et al., (1999, J. Phycol. pp. 113-120, of record) as applied to claims **1, 2, 6 and 7 above** and further in view of Lemoine et al., (1999, FEBS Letters pp. 325-330) has been withdrawn.

In view of amendment of claims 1 and 27-31, and cancellation of claims 3-6, 8-10, 32-39 and 43-55 by Examiner's amendment, rejection of **claims 1, 6, 23, 24, 25, 26, 27, 28-31 and 40-47** under 35 U.S.C. 103(a) as being unpatentable over Hallmann et al., (1996, Proc. Natl. Acad. Sci, pp. 669-673, of record) in view of Harasawa U.S. Patent 4,235,043 (Date of Patent Nov. 25,

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1980) and further in view of Apt (Mol Gen Gene, 1996, 572-579) and Fisher et al., (1999, J. Phycol. pp. 113-120, of record) has been withdrawn.

In view of amendment of claims 1 and 27-31, and cancellation of claims 3-6, 8-10, 32-39 and 43-55 by Examiner's amendment, rejection of **claims 4, 9, 34, 36, 50 and 52** under 35 U.S.C. 103(a) as being unpatentable over Hallmann et al., (1996, Proc. Natl. Acad. Sci, pp. 669-673, of record) in view of Harasawa U.S. Patent 4,235,043 (Date of Patent Nov. 25, 1980) and further in view of Apt (Mol Gen Gene, 1996, 572-579) and Fisher et al., (1999, J. Phycol pp. 113-120, of record) as applied to claims **1, 6, 23, 24, 25, 26, 27, 28-31 and 40-47 above** and further in view of Lemoine et al., (1999, FEBS Letters pp. 325-330) is rendered moot.

In view of amendment of claims 1 and 27-31, and cancellation of claims 3-6, 8-10, 32-39 and 43-55 by Examiner's amendment, rejection of **claims 38 and 54** under 35 U.S.C. 103(a) as being unpatentable over Hallmann et al., (1996, Proc. Natl. Acad. Sci, pp. 669-673, of record) in view of Harasawa U.S. Patent 4,235,043 (Date of Patent Nov. 25, 1980) and further in view of Apt (mol Gen Gene, 1996, 572-579) and Fisher et al., (1999, J. Phycol. pp. 113-120, of record) as applied to claims **1, 6, 23, 24, 25, 26, 27, 28-31 and 40-47 above** and further in view of Asano et al., (J Biol Chem 1991 pp. 24632-6) is rendered moot.

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Notice To Comply with Sequence Rules for Patent Applications containing nucleotide Sequence and/Or Amino acid Sequence Disclosures

In view of applicants' amendment of the specification at page 1 above background to insert sequence identifiers for nucleotide sequences greater than 10 nucleotides in length and primes with no corresponding SEQ ID NO, and Applicants' submission of a statement asserting that the Sequences in the CRF, objection to the specification has been withdrawn.

Provisional Rejection, Obviousness Type Double Patenting-

Claims 1 and 27-31 are not longer provisionally rejected under Double Patenting rejection over claims over claims 1-10 and 23-63 of copending Application No. 11/842898 filed on 08/21/2007 with the same effective filing date of the instant invention of March 21, 2000. If a provisional double patenting rejection (of any type) is the only rejection remaining in two conflicting applications, the examiner should withdraw that rejection in one of the applications (e.g., the application with the earlier filing date) and permit the application to issue as a patent (MPEP 1504.06 [R-5] under the heading Double Patenting).

Conclusion

Claims 1 and 27-31 are allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Leavitt whose telephone number is 571-272-1085. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach, Ph.D can be reached on (571) 272-0739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 1633; Central Fax No. (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Maria Leavitt/

Maria Leavitt
Primary Examiner, Art Unit 1633

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